

Table. OWL-DL rules.

Class	OWL-DL Rule
menu_food	(has_main_ingredient min 1 food_product) and (has_menu_main_process some xsd:string)
bright_color_menu	non_cooked_menu and (has_main_ingredient some food_product_by_color)
brown_color_menu	(menu_cooked_by_dry_heat or menu_cooked_by_dry_heat_with_fat) and (has_main_ingredient some (simple_carbohydrate or starch))
dark_color_menu	((has_ingredient some (potassium or sodium)) and (has_main_ingredient some anthocyanin)) and (boiled_menu or fried_menu or grilled_menu or roasted_menu or simmered_menu or steamed_menu or stir-fried_menu)
dull_color_menu	(cooked_menu) and (has_main_ingredient some (anthoxanthin or chlorophyll))
golden_brown_color_menu	(fried_menu or grilled_menu) and (has_main_ingredient some (protein or simple_carbohydrate or starch))
mix_color_menu	(has_condiment_ingredient some (food_product_by_color and (fresh or raw))) and (has_main_ingredient some (carbohydrate or protein))
fresh_aroma_menu	has_ingredient some (Apiaceae or Citrus or Lamiaceae or Zingiberaceae)
pungent_aroma_menu	has_ingredient some (Allium or Capsicum or Piper)
menu_contain_fish	has_ingredient some (Actinopterygii)
menu_contain_gluten	has_ingredient some (Triticum)
menu_contain_hen_egg	has_ingredient some (egg and Aves)
menu_contain_peanut	has_ingredient some (Arachis)
menu_contain_shellfish	has_ingredient some (Mollusca or Malacostraca)
menu_contain_soybean	has_ingredient some (Glycine)
menu_relate_type_2_diabetes	menu_high_complex_carbohydrate_food
menu_relate_constipation	menu_high_water_insoluble_dietary_fiber and watery_menu
menu_relate_diarrhea	watery_menu and (soft_menu or tender_menu)
menu_relate_flatulence	(fresh_aroma_menu or pungent_aroma_menu or watery_menu)
menu_relate_peptic_ulcer	tender_menu
menu_relate_hypertension	menu_high_complex_carbohydrate_food or menu_high_potassium_food or menu_high_magnesium_food or menu_high_calcium_food
menu_relate_depressive	menu_high_zinc_food or menu_high_chromium_food or menu_high_vitamin_b9_food or menu_high_magnesium_food or menu_high_iron_food or menu_high_omega_3_food
menu_relate_dry_mouth	(bright_color_menu or mix_color_menu) and (fresh_aroma_menu or pungent_aroma_menu) and (hot_and_spicy_menu or sourness_menu)

Class	OWL-DL Rule
menu_relate_oral_ulcer	menu_suitable_serve_at_room_temperature and (soft_menu or tender_menu)
menu_relate_tooth_decay	(soft_menu and (has_main_ingredient some (Actinopterygii or chopped))) or (tender_menu and (has_main_ingredient some (Actinopterygii or chopped)))
menu_relate_weight_gain	menu_high_protein_food or menu_high_water_insoluble_dietary_fiber
menu_relate_weight_loss	menu_high_simple_carbohydrate_food or menu_high_unsaturated_fatty_acid_food or menu_high_starch_food or menu_high_protein_food
menu_high_complex_carbohydrate_food	(has_main_ingredient some complex_carbohydrate) or (has_side_dish some complex_carbohydrate)
menu_high_raffinose_food	(has_main_ingredient some raffinose) or (has_side_dish some raffinose)
menu_high_water_insoluble_dietary_fiber	(has_main_ingredient some water_insoluble_dietary_fiber) or (has_side_dish some water_insoluble_dietary_fiber)
menu_high_water_soluble_dietary_fiber	(has_main_ingredient some water_soluble_dietary_fiber) or (has_side_dish some water_soluble_dietary_fiber)
menu_high_starch_food	(has_main_ingredient some ({'Noodle, rice, fresh' , 'Noodle, rice, small size strip, dried' , 'Noodle, rice, fermented, fresh' , 'Noodle, rice, vermicelli, dried' , 'Noodle, wheat, flat strip' , 'Noodle, wheat, fresh' , 'Noodle, wheat, dried, longevity (Mee-sua)' , 'Noodle, wheat, instant, w/flavour(different flavours)'})) or (has_main_ingredient some starch) or (has_side_dish some ({'Noodle, rice, fresh' , 'Noodle, rice, small size strip, dried' , 'Noodle, rice, fermented, fresh' , 'Noodle, rice, vermicelli, dried' , 'Noodle, wheat, flat strip' , 'Noodle, wheat, fresh' , 'Noodle, wheat, dried, longevity (Mee-sua)' , 'Noodle, wheat, instant, w/flavour(different flavours)'})) or (has_side_dish some starch)
menu_high_simple_carbohydrate_food	(has_main_ingredient some simple_carbohydrate)
menu_high_fatty_acid_food	menu_high_saturated_fatty_acid_food or menu_high_unsaturated_fatty_acid_food
menu_high_saturated_fatty_acid_food	((fried_menu or stir-fried_menu) and (has_oil_and_fat_ingredient some saturated_fatty_acid)) or (has_main_ingredient some saturated_fatty_acid) or (simmered_menu and (has_ingredient some ({'Coconut milk, canned, per 100ml' , 'Coconut milk, powder, instant'})))
menu_high_unsaturated_fatty_acid_food	((fried_menu or stir-fried_menu) and (has_oil_and_fat_ingredient some unsaturated_fatty_acid)) or (has_main_ingredient some unsaturated_fatty_acid)
menu_high_MUFA_food	((fried_menu or stir-fried_menu) and (has_oil_and_fat_ingredient some MUFA)) or (has_main_ingredient some MUFA)
menu_high_PUFA_food	((fried_menu or stir-fried_menu) and (has_oil_and_fat_ingredient some PUFA)) or (has_main_ingredient some PUFA)

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menu_high_omega_3_food	((fried_menu or stir-fried_menu) and (has_oil_and_fat_ingredient some omega_3)) or (has_main_ingredient some omega_3)
menu_high_calcium_food	menu_contain_mineral_food and (has_ingredient some vitamin_d) and (has_main_ingredient some calcium)
menu_high_chloride_food	(menu_contain_mineral_food and (has_main_ingredient some chloride)) or (menu_contain_mineral_food and simmered_menu and (has_ingredient some chloride))
menu_high_chromium_food	menu_contain_mineral_food and (has_main_ingredient some chromium)
menu_high_cobalt_food	menu_contain_mineral_food and (has_main_ingredient some cobalt)
menu_high_copper_food	menu_contain_mineral_food and (has_main_ingredient some copper)
menu_high_fluorine_food	menu_contain_mineral_food and (has_main_ingredient some fluorine)
menu_high_iodine_food	menu_contain_mineral_food and (has_main_ingredient some iodine)
menu_high_iron_food	menu_contain_mineral_food and non_cooked_menu and (has_ingredient some vitamin_c) and (has_main_ingredient some iron)
menu_high_magnesium_food	menu_contain_mineral_food and (has_main_ingredient some magnesium)
menu_high_manganese_food	menu_contain_mineral_food and (has_main_ingredient some manganese)
menu_high_molybdenum_food	menu_contain_mineral_food and (has_main_ingredient some molybdenum)
menu_high_phosphorus_food	menu_contain_mineral_food and (has_main_ingredient some phosphorus)
menu_high_potassium_food	menu_contain_mineral_food and (has_main_ingredient some potassium)
menu_high_selenium_food	menu_contain_mineral_food and (has_main_ingredient some selenium)
menu_high_sodium_food	menu_contain_mineral_food and (has_main_ingredient some sodium) or (menu_contain_mineral_food and simmered_menu and (has_ingredient some sodium))
menu_high_sulfur_food	menu_contain_mineral_food and (has_main_ingredient some sulfur)
menu_high_zinc_food	menu_contain_mineral_food and (has_main_ingredient some zinc)
menu_high_citric_acid_food	(has_main_ingredient some citric_acid)
menu_high_oxalic_acid_food	(has_main_ingredient some ({'Wildbetal leafbush, leaves, cut' , 'Wildbetal leafbush, leaves, shredded'}))
menu_high_tartaric_acid_food	(has_main_ingredient some tartaric_acid)

Class	OWL-DL Rule
menu_high_protein_food	(has_main_ingredient some protein) or (has_side_dish some protein)
menu_high_choline_food	(has_main_ingredient some choline) or (has_side_dish some choline)
menu_high_vitamin_a_food	((has_ingredient some fatty_acid)) and (has_main_ingredient some vitamin_a) or ((has_ingredient some fatty_acid)) and (has_side_dish some vitamin_a)
menu_high_vitamin_b12_food	(has_main_ingredient some vitamin_b12) or (has_side_dish some vitamin_b12)
menu_high_vitamin_b1_food	(has_main_ingredient some vitamin_b1) or (has_side_dish some vitamin_b1)
menu_high_vitamin_b2_food	(has_main_ingredient some vitamin_b2) or (has_side_dish some vitamin_b2)
menu_high_vitamin_b3_food	(has_main_ingredient some vitamin_b3) or (has_side_dish some vitamin_b3)
menu_high_vitamin_b5_food	(has_main_ingredient some vitamin_b5) or (has_side_dish some vitamin_b5)
menu_high_vitamin_b6_food	(has_main_ingredient some vitamin_b6) or (has_side_dish some vitamin_b6)
menu_high_vitamin_b8_food	(has_main_ingredient some vitamin_b8) or (has_side_dish some vitamin_b8)
menu_high_vitamin_b9_food	(has_main_ingredient some vitamin_b9) or (has_side_dish some vitamin_b9)
menu_high_vitamin_c_food	(non_cooked_menu and (has_ingredient some vitamin_e) and (has_main_ingredient some vitamin_c)) or (non_cooked_menu and (has_ingredient some vitamin_e) and (has_side_dish some vitamin_c))
menu_high_vitamin_d_food	((has_ingredient some fatty_acid)) and (has_main_ingredient some vitamin_d) and (has_menu_main_process some rdfs:Literal) or ((has_ingredient some fatty_acid) and (has_side_dish some vitamin_d) and (has_menu_main_process some rdfs:Literal))
menu_high_vitamin_e_food	((((has_ingredient some fatty_acid)) and (has_main_ingredient some vitamin_e) and (has_menu_main_process some rdfs:Literal) and non_cooked_menu) or (((has_ingredient some fatty_acid)) and (has_side_dish some vitamin_e) and (has_menu_main_process some rdfs:Literal) and non_cooked_menu))
menu_high_vitamin_k_food	((has_ingredient some fatty_acid)) and (has_main_ingredient some vitamin_k) or (((has_ingredient some fatty_acid)) and (has_side_dish some vitamin_k))
grilled_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "grilled_menu")
roasted_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "roasted_menu")

Class	OWL-DL Rule
fried_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "fried_menu")
stir-fried_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "stir-fried_menu")
menu_cooked_by_dry_heat	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "grilled_menu" or (has_menu_main_process value "roasted_menu"))
menu_cooked_by_dry_heat_with_fat	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "fried_menu" or (has_menu_main_process value "stir-fried_menu"))
boiled_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "boiled_menu")
simmered_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "simmered_menu")
steamed_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "steamed_menu")
menu_cooked_by_moist_heat	(has_main_ingredient min 1 food_product) and ((has_menu_main_process value "boiled_menu") or (has_main_ingredient min 1 food_product) and (has_menu_main_process value "simmered_menu") or (has_main_ingredient min 1 food_product) and (has_menu_main_process value "steamed_menu"))
mixed_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "mixed_menu")
non_cooked_menu	(has_main_ingredient min 1 food_product) and (has_menu_main_process value "mixed_menu")
menu_serve_at_high_temperature	simmered_menu or stir-fried_menu
menu_suitable_serve_at_room_temperature	boiled_menu or fried_menu or mixed_menu or steamed_menu
hot_and_spicy_menu	(has_ingredient some (Capsicum or Piper))
saltiness_menu	(has_ingredient some (fermented or sodium))
sourness_menu	(has_ingredient some ((Plantae and carbohydrate and fermented) or (Plantae and carbohydrate and pickled)))
sweetness_menu	(has_main_ingredient some (simple_carbohydrate or ({'Coconut milk, light', 'Coconut milk, canned, per 100ml', 'Coconut milk, powder, instant'})))
crispy-crunchy_menu	(fried_menu and (has_ingredient some starch)) or (non_cooked_menu and (has_main_ingredient some ((fresh or raw) and (fruits_and_products or vegetables_and_products))))
soft_menu	(cooked_menu and (has_main_ingredient some (fruits_and_products or vegetables_and_products))) or (menu_cooked_by_moist_heat and has_main_ingredient some (chopped or egg or starch))
tender_menu	cooked_menu and (has_main_ingredient some trunk or Actinopterygii)

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tough_menu	(boiled_menu or fried_menu or grilled_menu or roasted_menu or stir-fried_menu) and has_main_ingredient some (cartilage or foot or head or limb or muscle_organ or skin))
watery_menu	(has_main_ingredient some ({Water , 'Coconut milk, light' , 'Coconut milk, canned, per 100ml ' , 'Soup, stock, chicken'})) or simmered_menu
black	has_eng_description value "black"^^xsd:string
green	has_eng_description value "green"^^xsd:string
grey	has_eng_description value "grey"^^xsd:string
purple	has_eng_description value "purple"^^xsd:string
red	has_eng_description value "red"^^xsd:string
silver	has_eng_description value "silver"^^xsd:string
white	has_eng_description value "white"^^xsd:string
yellow	has_eng_description value "yellow"^^xsd:string
animal_food_product	animalia
plant_food_product	plantae
aquatic_food	Palaemonidae or Parathelphusidae or Penaeidae or Portunidae or Varunidae or Actinopterygii or Mollusca
freshwater	has_eng_description value " freshwater"^^xsd:string
saltwater	has_eng_description value " saltwater"^^xsd:string
land_food	Bovidae or Leporidae or Suidae or Aves
mammal_food	Bovidae or Leporidae or Suidae
poultry_food	Aves
young	has_eng_description value "young"^^xsd:string
immature	has_eng_description value "immature"^^xsd:string
mature	has_eng_description value "mature"^^xsd:string
ripe	has_eng_description value "ripe"^^xsd:string
unripe	has_eng_description value "unripe"^^xsd:string
sprout	has_eng_description value " sprout"^^xsd:string
meat	(has_scientific_name some xsd:string) and ((has_eng_description value "Longissimus dorsi"^^xsd:string) or (has_eng_description value "thigh"^^xsd:string) or (has_eng_description value "drumstick"^^xsd:string) or (has_eng_description value "wing"^^xsd:string) or (has_eng_description value "breast"^^xsd:string) or (has_eng_description value "meat"^^xsd:string) or (has_eng_description value "ham"^^xsd:string) or (has_eng_description value "shoulder"^^xsd:string) or (has_eng_description value "spare ribs"^^xsd:string) or (has_eng_description value "tenderloin"^^xsd:string) or (has_eng_description value "rib"^^xsd:string) or (has_eng_description value "head"^^xsd:string) or (has_eng_description value "belly"^^xsd:string) or (has_eng_description value "loin"^^xsd:string) or

Class	OWL-DL Rule
	(has_eng_description value "sirloin"^^xsd:string)
head	(has_scientific_name some xsd:string) and (has_eng_description value "drumstick"^^xsd:string)
drumstick	(has_scientific_name some xsd:string) and (has_eng_description value "head"^^xsd:string)
ham	(has_scientific_name some xsd:string) and (has_eng_description value "ham"^^xsd:string)
leg	(has_scientific_name some xsd:string) and (has_eng_description value "leg"^^xsd:string)
round	(has_scientific_name some xsd:string) and (has_eng_description value "round"^^xsd:string)
shoulder	(has_scientific_name some xsd:string) and (has_eng_description value "shoulder"^^xsd:string)
thigh	(has_scientific_name some xsd:string) and (has_eng_description value "thigh"^^xsd:string)
wing	(has_scientific_name some xsd:string) and (has_eng_description value "wing"^^xsd:string)
belly	(has_scientific_name some xsd:string) and (has_eng_description value "belly"^^xsd:string)
breast	(has_scientific_name some xsd:string) and (has_eng_description value "breast"^^xsd:string)
loin	(has_scientific_name some xsd:string) and (has_eng_description value "loin"^^xsd:string)
longissimus dorsi	(has_scientific_name some xsd:string) and (has_eng_description value " longissimus dorsi"^^xsd:string)
rib	(has_scientific_name some xsd:string) and (has_eng_description value "rib"^^xsd:string)
sirloin	(has_scientific_name some xsd:string) and (has_eng_description value "sirloin"^^xsd:string)
spare_rib	(has_scientific_name some xsd:string) and (has_eng_description value "spare rib"^^xsd:string)
tenderloin	(has_scientific_name some xsd:string) and (has_eng_description value "tenderloin"^^xsd:string)
brain	(has_scientific_name some xsd:string) and (has_eng_description value "brain"^^xsd:string)
kidney	(has_scientific_name some xsd:string) and (has_eng_description value " kidney"^^xsd:string)
liver	(has_scientific_name some xsd:string) and (has_eng_description value "liver"^^xsd:string)
pancreas	(has_scientific_name some xsd:string) and (has_eng_description value "pancreas"^^xsd:string)
abomasum	(has_scientific_name some xsd:string) and (has_eng_description value "abomasum"^^xsd:string)
gizzard	(has_scientific_name some xsd:string) and (has_eng_description value "gizzard"^^xsd:string)

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heart	(has_scientific_name some xsd:string) and (has_eng_description value "heart"^^xsd:string
intestine	(has_scientific_name some xsd:string) and (has_eng_description value "intestine"^^xsd:string
lung	(has_scientific_name some xsd:string) and (has_eng_description value "lung"^^xsd:string
rumen	(has_scientific_name some xsd:string) and (has_eng_description value "rumen"^^xsd:string
tongue	(has_scientific_name some xsd:string) and (has_eng_description value "tongue"^^xsd:string
bile	(has_scientific_name some xsd:string) and (has_eng_description value "bile"^^xsd:string
blood	(has_scientific_name some xsd:string) and (has_eng_description value "blood"^^xsd:string
bone	(has_scientific_name some xsd:string) and (has_eng_description value "bone"^^xsd:string
cartilage	(has_scientific_name some xsd:string) and (has_eng_description value "cartilage"^^xsd:string
fat	(has_scientific_name some xsd:string) and (has_eng_description value "fat"^^xsd:string
foot	(has_scientific_name some xsd:string) and (has_eng_description value "foot"^^xsd:string
maw	(has_scientific_name some xsd:string) and (has_eng_description value "maw"^^xsd:string
roe	(has_scientific_name some xsd:string) and (has_eng_description value "roe"^^xsd:string
skin	(has_scientific_name some xsd:string) and (has_eng_description value "skin"^^xsd:string
tendon	(has_scientific_name some xsd:string) and (has_eng_description value "tendon"^^xsd:string
egg	(has_scientific_name some xsd:string) and (has_eng_description value "egg"^^xsd:string
yolk	(has_scientific_name some xsd:string) and (has_eng_description value "yolk"^^xsd:string
milk	(has_scientific_name some xsd:string) and (has_eng_description value "milk"^^xsd:string
cob	(has_scientific_name some xsd:string) and (has_eng_description value "cob"^^xsd:string
leaf	(has_scientific_name some xsd:string) and (has_eng_description value "leaf"^^xsd:string
cotyledon	(has_scientific_name some xsd:string) and (has_eng_description value "cotyledon"^^xsd:string
tip	(has_scientific_name some xsd:string) and (has_eng_description value "tip"^^xsd:string

Class	OWL-DL Rule
top	(has_scientific_name some xsd:string) and (has_eng_description value "top"^^xsd:string
peel	(has_scientific_name some xsd:string) and (has_eng_description value "peel"^^xsd:string
pod	(has_scientific_name some xsd:string) and (has_eng_description value "pod"^^xsd:string
pulp	(has_scientific_name some xsd:string) and (has_eng_description value "pulp"^^xsd:string
rhizome	(has_scientific_name some xsd:string) and (has_eng_description value "rhizome"^^xsd:string
root	(has_scientific_name some xsd:string) and (has_eng_description value "root"^^xsd:string
seed	(has_scientific_name some xsd:string) and (has_eng_description value "seed"^^xsd:string
bulb	(has_scientific_name some xsd:string) and (has_eng_description value "bulb"^^xsd:string
flower	(has_scientific_name some xsd:string) and (has_eng_description value "flower"^^xsd:string
bud	(has_scientific_name some xsd:string) and (has_eng_description value "bud"^^xsd:string
flower_bud	(has_scientific_name some xsd:string) and (has_eng_description value "flower bud"^^xsd:string
inflorescence	(has_scientific_name some xsd:string) and (has_eng_description value " inflorescence"^^xsd:string
heart_plant	(has_scientific_name some xsd:string) and Plantae and (has_eng_description value "heart"^^xsd:string
shoot	(has_scientific_name some xsd:string) and (has_eng_description value "shoot"^^xsd:string
stalk	(has_scientific_name some xsd:string) and (has_eng_description value "stalk"^^xsd:string
petiole	(has_scientific_name some xsd:string) and (has_eng_description value "petiole"^^xsd:string
stem	(has_scientific_name some xsd:string) and (has_eng_description value "stem"^^xsd:string
bark	(has_scientific_name some xsd:string) and (has_eng_description value "bark"^^xsd:string
tuber	(has_scientific_name some xsd:string) and (has_eng_description value "tuber"^^xsd:string
whole	(has_scientific_name some xsd:string) and (has_eng_description value "whole"^^xsd:string
whole_body	(has_scientific_name some xsd:string) and Actinopterygii and (has_eng_description value "whole"^^xsd:string
whole_grain	(has_scientific_name some xsd:string) and (has_eng_description value "whole-grain "^^xsd:string

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whole_kernel	(has_scientific_name some xsd:string) and (has_eng_description value "whole-kernel"^^xsd:string
whole_wheat	(has_scientific_name some xsd:string) and (has_eng_description value "whole wheat"^^xsd:string
dried	(has_scientific_name some xsd:string) and (has_eng_description value "dried"^^xsd:string
fresh	(has_scientific_name some xsd:string) and (has_eng_description value "fresh"^^xsd:string
cooked	(has_eng_description value "cooked"^^xsd:string
baked	(has_eng_description value "baked"^^xsd:string
broiled	(has_eng_description value " broiled"^^xsd:string
grilled	(has_eng_description value "grilled"^^xsd:string
roasted	(has_eng_description value "roasted"^^xsd:string
blanched	(has_eng_description value "blanched"^^xsd:string
boiled	(has_eng_description value "boiled"^^xsd:string
steamed	(has_eng_description value "steamed"^^xsd:string
fried	(has_eng_description value "fried"^^xsd:string
chopped	(has_eng_description value "chopped"^^xsd:string
minced	(has_eng_description value "minced"^^xsd:string
shredded	(has_eng_description value "shredded"^^xsd:string
sliced	(has_eng_description value "sliced"^^xsd:string
crushed	(has_eng_description value "crushed"^^xsd:string
flour	(has_eng_description value "flour"^^xsd:string
ground	(has_eng_description value "ground"^^xsd:string
milled	(has_eng_description value "milled"^^xsd:string
undermilled	(has_eng_description value "undermilled"^^xsd:string
squeezed	(has_eng_description value "squeezed"^^xsd:string
brined	(has_eng_description value "brined"^^xsd:string
canned	(has_eng_description value "canned"^^xsd:string
fermented	(has_eng_description value "fermented"^^xsd:string
frozen	(has_eng_description value "frozen"^^xsd:string
pasteurised	(has_eng_description value "pasteurised"^^xsd:string
pickled	(has_eng_description value "pickled"^^xsd:string
salted	(has_eng_description value "salted"^^xsd:string
sterilised	(has_eng_description value "sterilised"^^xsd:string
uht	(has_eng_description value "UHT"^^xsd:string
raw	(has_eng_description value "raw"^^xsd:string
coated	(has_eng_description value "coated"^^xsd:string
deboned	(has_eng_description value "deboned"^^xsd:string
dehulled	(has_eng_description value "dehulled"^^xsd:string

Class	OWL-DL Rule
polished	(has_eng_description value "polished"^^xsd:string
splited	(has_eng_description value "splited"^^xsd:string
flavoured	(has_eng_description value "flavoured"^^xsd:string
seasoned	(has_eng_description value "seasoned"^^xsd:string
smoked	(has_eng_description value "smoked"^^xsd:string
parboiled	(has_eng_description value "parboiled"^^xsd:string
soaked	(has_eng_description value "soaked"^^xsd:string
carotenoid	plant_food_product and (red or yellow)
beta-carotene	plant_food_product and (yellow)
lycopene	plant_food_product and fruit and (red)
zeaxanthin	plant_food_product and (yellow or red)
chlorophyll	plant_food_product and (leaf or stem or stalk or tip)
anthocyanin	plant_food_product and (purple)
anthoxanthin	{'Cabbage, Chinese/Flowering white cabbage,flower ','Cabbage, Chinese/Flowering white cabbage,raw '}
lutein	yolk
1_8-cineole	Alpinia or Boesenbergia or Curcuma or Elettaria or Kaempferia or Zingiber
alkaloid	Piper
allicin	Allium and bulb and crushed
alliin	Allium and bulb
camphor	coriandrum and Alpinia or Boesenbergia or Curcuma or Elettaria or Kaempferia or Zingiber
capsaicin	Capsicum
cinnamaldehyde	Cinnamomum
cuminaldehyde	Cuminum
cuminic_alcohol	Cuminum
dill_ether	Anethum
dimethyl_sulphide	Citrus and (flesh or fruit)
eugenol	(root or rhizome) and (Alpinia or Boesenbergia or Curcuma or Elettaria or Kaempferia or Zingiber)
hydrogen_sulphide	(Citrus and fruit) or (Cymbopogon and stalk)
limonene	Citrus or Coriandrum
linalool	((Alpinia or Boesenbergia or Curcuma or Elettaria or Kaempferia or Zingiber) and (rhizome or root)) or Ocimum
menthol	Mentha
phthalide	Apium
piperine	Piper
sulfur	Allium or (egg and poultry_food) or (meat and mammal_food)
tannin	Cinnamomum and bark

Class	OWL-DL Rule
terpene	Apium
trans-cinnamaldehyde	Cinnamomum and bark
oligofructose	Allium and bulb
raffinose	seed and Fabaceae
water_insoluble_dietary_fiber	plant_food_product and (leaf or stem or stalk or root or shoot or 'heart (plant)')
water_soluble_dietary_fiber	plant_food_product and (flesh or pulp)
starch	((Phaseolus or Vicia) and seed and dried) or (Poaceae and seed and dried) or (starchy_roots_and_tubers_and_products) or (tuber)
simple_carbohydrate	(fruit and ripe) or (Mammalia and milk_and_products) or sugars_syrup_and_confectionery
calcium	(Actinopterygii and bone) or (Actinopterygii and whole) or (milk and bos) or {'Kale, Chinese, raw ', 'Rasbora fish'}
chloride	{'Crystal salt ', 'Table salt, granulated', 'Sauce, fish, grade 1, per100 ml ', 'Sauce, soy, light, grade 1, per100 ml (120.7 g) ', 'Sauce, oyster'}
magnesium	(mammal_food and (head or limb or trunk)) or (meat and mammal_food) or (seed and Fabaceae)
phosphorus	Actinopterygii or (Fabaceae and seed)
potassium	Leaf or {'Sweet potato, purple, fresh, raw ', 'Sweet potato, yellow, fresh, raw '}
sodium	(Animalia and (fermented or pickled)) or (Plantae and fermented) or (salted) or {'Crystal salt ', 'Table salt, granulated', 'Sauce, fish, grade 1, per100 ml ', 'Sauce, soy, light, grade 1, per100 ml (120.7 g) ', 'Sauce, oyster'}
sulfur	Allium or (egg and poultry_food) or (meat and mammal_food)
chromium	Liver or (Poaceae and seed and whole)
cobalt	(Brassica and leaf) or (Lactuca and leaf)
copper	(Fabaceae and seed) or liver
fluorine	(Palaemonidae and saltwater) or Penaeidae
iodine	saltwater
iron	varieties_meat or yolk or blood
manganese	(seed and whole) or whole_grain or whole_kernel
molybdenum	varieties_meat
selenium	(mammal_food and meat) or (Malacostraca or Mollusca) or (Actinopterygii and saltwater) or (Poaceae and seed and dried and whole)
zinc	(mammal_food and meat) or (Malacostraca or Mollusca) or (poultry_food and meat) or (mammal_food and milk)
saturated_fatty_acid	(fats_and_oils and (animal_food_product)) or (fats_and_oils and Elaeis)

Class	OWL-DL Rule
unsaturated_fatty_acid	(fats_and_oils and ((Brassica or Helianthus or Arachis or Glycine) and seed)) or (Scombridae or Pangasiidae or Clariidae)
omega_3	(Scombridae or Pangasiidae or Clariidae)
moisture	{Water, 'Soup, stock, chicken', 'Coconut milk, light'}
essential_amino_acid	animal_food_product and meat
non_essential_amino_acid	(Poaceae or Fabaceae) and (seed)
vitamin_a	Leaf or liver or (Mammalia and milk and whole) or (Plantae and red) or (Plantae and yellow) or yolk
vitamin_d	(Aves and egg) or (Aves and liver) or Clarias or (Mammalia and liver) or Scombridae
vitamin_e	(Arachis and dried and seed) or (leaf and raw) or (Poaceae and seed and whole)
vitamin_k	Brassica or (Glycine and dried and seed) or (leaf and raw)
choline	liver or yolk or (whole and milk) or (Fabaceae and dried and seed)
vitamin_b1	(Mammalia and kidney) or (Mammalia and liver) or (Poaceae and seed and whole) or {'Oil, sunflower'}
vitamin_b12	liver or longissimus_dorsi or loin or tenderloin or breast or (meat and Anatidae) or Scombridae or Malacostraca or Mollusca
vitamin_b2	(leaf and raw) or (Mammalia and milk) or (meat and Actinopterygii) or (meat and Aves) or (meat and mammalia) or (Poaceae and seed and whole)
vitamin_b3	(meat and (mammal_food or poultry_food)) or Scombridae or (seed and dried and Fabaceae) or (whole and seed and dried and Poaceae)
vitamin_b5	(varieties_meat and mammal_food) or Scombridae or Pangasius or (whole and dried and seed and Poaceae) or (dried and seed and Fabaceae) or Lentinus or Volvariella
vitamin_b6	varieties_meat or (meat and poultry_food) or (seed and dried and Poaceae) or (seed and dried and Fabaceae) or (Solanum or Ipomoea) and starchy_roots_and_tubers_and_products)
vitamin_b8	liver or (meat and (mammal_food or poultry_food)) or Scombridae or yolk or (mammal_food and milk)
vitamin_b9	liver or (meat and (mammal_food or poultry_food)) or Scombridae or yolk or (seed and dried and whole and Poaceae) or (seed and dried and Helianthus) or (fats_and_oils and Helianthus) or (leaf)
vitamin_c	Brassica or (Citrus and (fruit or pulp)) or (Cucurbitaceae and flesh) or (leaf and raw) or (Plantae and yellow)
citric_acid	fruit and Citrus
oxalic_acid	leaf and Piper
tartaric_acid	pulp and Tamarindus

Table. SPARQL query language.

Query	SPARQL
Depressive	{?x rdf:type ment:menu_relate_depressive}
Type 2 diabetes	{{?x rdf:type ment:menu_relate_diabetes_type_2} minus {?x rdf:type ment:menu_high_sodium_food} minus {?x rdf:type ment:menu_high_simple_carbohydrate_food}}
Hypertension	{{?x rdf:type ment:menu_relate_hypertension} minus {?x rdf:type ment:menu_high_sodium_food}}
Weight gain	{{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food}}
Weight loss	{?x rdf:type ment:menu_relate_weight_loss}
Constipation	{?x rdf:type ment:menu_relate_constipation}
Diarrhea	{{?x rdf:type ment:menu_relate_diarrhea} minus { ?x rdf:type ment:sourness_menu} minus {?x rdf:type ment:hot_and_spicy_menu} minus { ?x rdf:type ment:menu_high_fatty_acid} minus {?x rdf:type ment:menu_high_raffinose_food}}
Flatulence	{{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}
Peptic ulcer	{{?x rdf:type ment:menu_relate_peptic_ulcer} minus {?x rdf:type ment:hot_and_spicy_menu}}
Tooth decay	{{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy-crunchy_menu} minus {?x rdf:type ment:tough_menu}}
Dry mouth	{{?x rdf:type ment:menu_relate_dry_mouth}}
Oral ulcer	{{?x rdf:type ment:menu_relate_oral_ulcer} minus { ?x rdf:type ment:hot_and_spicy_menu} minus {?x rdf:type ment:sourness_menu}}
Fish allergic	{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_fish}}
gluten allergic	{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_gluten}}
Egg-allergic	{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_hen_egg}}
peanut allergic	{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_peanut}}
shellfish allergic	{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_shellfish}}
soybean allergic	{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_soybean}}
Menu for depressive and diabetes type2	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_diabetes_type_2} minus {?x rdf:type ment:menu_high_sodium_food} minus {?x rdf:type ment:menu_high_simple_carbohydrate_food}}}
Menu for depressive, flatulence, and tooth decay	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}.{{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy-crunchy_menu} minus {?x rdf:type ment:tough_menu}}}

Query	SPARQL
Menu for depressive, hypertension, weight gain, and soybean allergic	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_hypertension} minus {?x rdf:type ment:menu_high_sodium_food}}.{{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food} }.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_soybean}}}}
Menu for depressive, weight loss, constipation, and gluten allergic	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_weight_loss} {?x rdf:type ment:menu_relate_constipation}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_gluten}}}}
Menu for depressive, weight loss, and dry mouth	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_weight_loss} .{{?x rdf:type ment:menu_relate_dry_mouth}}}}
Menu for depressive, peptic ulcer	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_peptic_ulcer} minus {?x rdf:type ment:hot_and_spicy_menu}}}}
Menu for depressive, constipation, tooth decay	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_constipation} . {{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy- crunchy_menu} minus {?x rdf:type ment:tough_menu}}}}
Menu for depressive, weight loss	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_weight_loss}}}
Menu for depressive, hypertension, weight gain, shellfish allergic	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_hypertension} minus {?x rdf:type ment:menu_high_sodium_food}}.{{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food} }.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_shellfish}}}}
Menu for depressive, flatulence	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}}}
Menu for depressive, tooth decay	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy- crunchy_menu} minus {?x rdf:type ment:tough_menu}}}}
Menu for depressive, diabetes type2, weight loss, soybean allergic	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_diabetes_type_2} minus {?x rdf:type ment:menu_high_sodium_food} minus {?x rdf:type ment:menu_high_simple_carbohydrate_food}}.{{?x rdf:type ment:menu_relate_weight_loss}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_soybean}}}}
Menu for depressive, weight loss, tooth decay	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_weight_loss} .{{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy- crunchy_menu} minus {?x rdf:type ment:tough_menu}}}}
Menu for depressive, peanut allergic	SELECT ?x WHERE {{{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_peanut}}}}
Menu for depressive, dry	SELECT ?x WHERE { {?x rdf:type ment:menu_relate_depressive}.

Query	SPARQL
mouth	{{?x rdf:type ment:menu_relate_dry_mouth}}
Menu for depressive, constipation	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_constipation}}
Menu for depressive, hypertension	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_hypertension} minus {?x rdf:type ment:menu_high_sodium_food}}
Menu for depressive, tooth decay, gluten allergic	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy- crunchy_menu} minus {?x rdf:type ment:tough_menu}}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_gluten}}
Menu for depressive, hypertension, weight gain, egg allergic, peanut allergic	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_hypertension} minus {?x rdf:type ment:menu_high_sodium_food} } .{{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food} }.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_hen_egg}}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_peanut}}}}
Menu for depressive, weight gain	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food} }.
Menu for 21depressive, weight gain, constipation	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food}}.{{?x rdf:type ment:menu_relate_constipation}}
Menu for depressive, diabetes type2, flatulence, dry mouth	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}.{{?x rdf:type ment:menu_relate_dry_mouth}}
Menu for depressive, constipation, flatulence	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_constipation}.{{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}
Menu for depressive, fish allergic	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_fish}}}
Menu for depressive, diabetes type2, weight loss	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_diabetes_type_2} minus {?x rdf:type ment:menu_high_sodium_food} minus {?x rdf:type ment:menu_high_simple_carbohydrate_food}} .{{?x rdf:type ment:menu_relate_weight_loss}}
Menu for depressive, weight loss, gluten allergic, egg allergic, peanut allergic, shellfish allergic, soybean allergic	SELECT ?x WHERE { {?x rdf:type ment:menu_relate_depressive}. {?x rdf:type ment:menu_relate_weight_loss}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_gluten}}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_hen_egg}}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_peanut}}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_shellfish}}. {{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_soybean}}}

Query	SPARQL
Menu for depressive, weight gain, dry mouth	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food}}.{{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy-crunchy_menu} minus {?x rdf:type ment:tough_menu}}}}
Menu for depressive, weight gain, tooth decay	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_weight_gain} minus {?x rdf:type ment:menu_high_fatty_acid_food}}.{{?x rdf:type ment:menu_relate_tooth_decay} minus {?x rdf:type ment:crispy-crunchy_menu} minus {?x rdf:type ment:tough_menu}}}}
Menu for depressive, hypertension, flatulence	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_hypertension} minus {?x rdf:type ment:menu_high_sodium_food}}.{{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}}}
Menu for depressive, flatulence, shellfish allergic	SELECT ?x WHERE {{?x rdf:type ment:menu_relate_depressive}. {{?x rdf:type ment:menu_relate_flatulence} minus {?x rdf:type ment:menu_high_raffinose_food}}.{{?x rdf:type ment:menu_food } minus {?x rdf:type ment:menu_contain_shellfish}}}}